Exercise Solutions for Math 20

Equations in Quadratic Form and with Radicals and Absolute Values

Nile Jocson <novoseiversia@gmail.com>

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1 Find the solution set of the following inequalities.

1.1 $\frac{2x+1}{4} \leq \frac{2x}{3} + \frac{1}{6}$

$\Rightarrow \frac{3(2x+1)}{12} \leq \frac{4(2x)}{12} + \frac{2}{12}$ $\Rightarrow \frac{6x+3}{12} \leq \frac{8x}{12} + \frac{2}{12}$ $\Rightarrow \frac{6x+3}{12} \leq \frac{8x+2}{12}$ $\Rightarrow 6x + 3 \leq 8x + 2$ $\Rightarrow 3 - 2 \leq 8x - 6x$ $\Rightarrow 1 \leq 2x$	LCM = 12
$\Rightarrow x \geq \frac{1}{2}$	Final answer. ■

1.2 $-2 < 5 + 3x < 20$

$\Rightarrow -7 < 3x < 15$ $\Rightarrow -\frac{7}{3} < x < 5$	Solve for x.
$\Rightarrow x \in (-\frac{7}{3}, 5)$	Final answer. ■